

BEST AVAILABLE COPY

Arabinose

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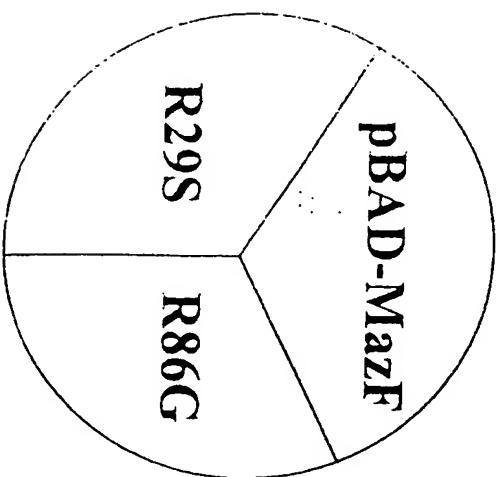


FIG. 1A

FIG. 1B

S  
▲

<i>E. coli</i>	1	-----MVSRYVPDMGLIHWVFENITKICDAHFIHAWVLSPFMYENKFG-----MCLCVF
<i>B. halodurans</i>	1	-----MPVPDMNLVYVFNISQS HLA T HAI L PKLFNNIG-----FAVWCF
<i>S. epidermidis</i>	1	-----MIRAGVYLAISVQVAVVAVV I QN TGKYSP-----TVIAAA
<i>S. aureus</i>	1	-----MIRAGVYLAISVQVAVVAVV I QN TGKYSP-----TVIAAA
<i>B. subtilis</i>	1	-----MIVKAGVYFAVSSVVAVVAVV I QN IGRFSP-----TAIAAA
<i>N. meningitidis</i>	1	-----MYIPDKATPHHIFSSKIKGFAAIPKAFFAAG-----VFAC
<i>M. organii</i>	1	MRRRLVRRKSDMEHKLSTATAHQQTVVLPAAFEVVR-----PFAV
<i>M. tuberculosis</i>	1	-----MMRMEIWOVTHHARANNQAAVNNRAATATRLGRGTTIV

G  
▲

<i>E. coli</i>	51	CTQS--KEYFEFVLS-----QERAAAVFSAWRAGATKGTAPFELQLIKA
<i>B. halodurans</i>	48	PRRQ--KEYFEFPP---LPISTWRAVNFHIKGAPEETMTCLQ
<i>S. epidermidis</i>	46	EDGINKKI:THLEKKKYKDKSLEK-K-KKEITFSSSKIEVIN
<i>S. aureus</i>	46	EDGINKKI:THLEKKKYKDKSLEK-K-KKEITYSSKKEVIN
<i>B. subtilis</i>	47	HAQCK-KLTHLEDAKRYFELSLEK-K-QATDITHIDEMDKIE
<i>N. meningitidis</i>	48	ISQGNAAARSSGMISTLLGATETQNHCHLWQIKASFKETPQYVDDALA
<i>M. organii</i>	56	VISGGN-FARTAGFAVSLDGAIRTTVRCDFEIMKAGGKRLEPPTIDVVLG
<i>M. tuberculosis</i>	51	VESNIA-KVYFQVLLSATTTLQVCKAQA--SIAT-EILRPIGRSAAELAQLIE

<i>E. coli</i>	105	KINYLIG-----
<i>B. halodurans</i>	103	LHTEFS-----
<i>S. epidermidis</i>	105	ALDISGNNFDHHS-----
<i>S. aureus</i>	105	ALMISGLNAVAQPEKLGVIYMYFSEINKILI
<i>B. subtilis</i>	106	ALQISALIDF-----
<i>N. meningitidis</i>	108	RIGAVIFD-----
<i>M. organii</i>	115	REATIT-----
<i>M. tuberculosis</i>	109	ALKIHDFWS-----

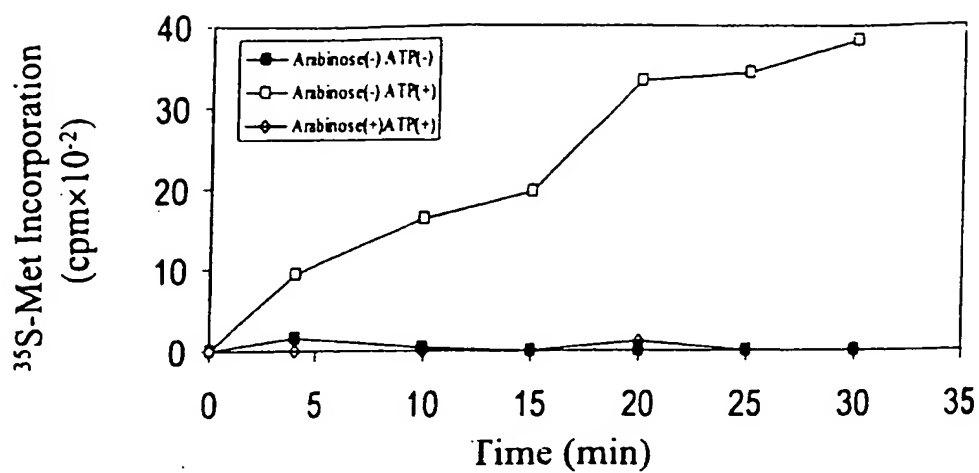


FIG. 2A

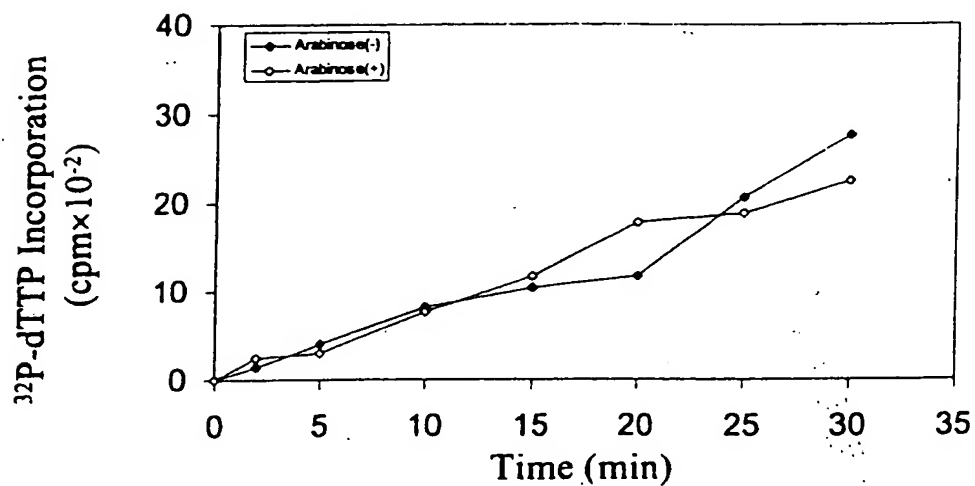


FIG. 2B

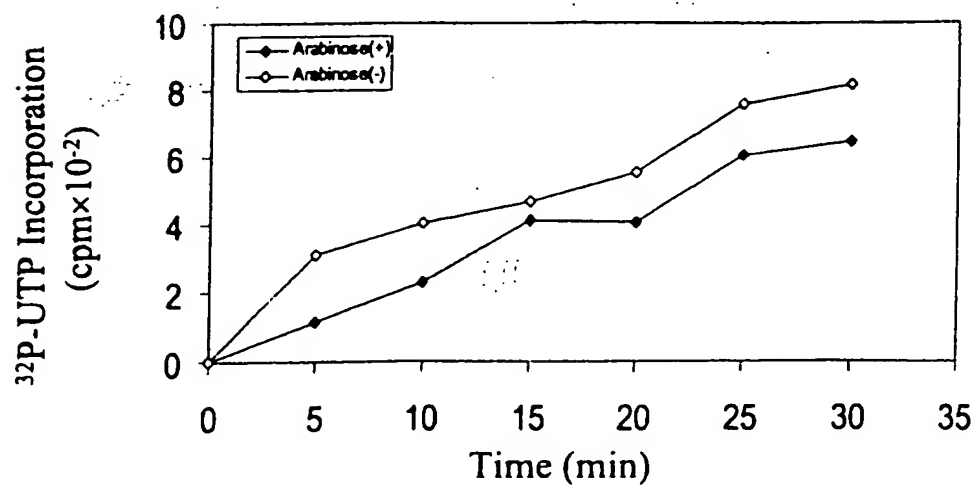


FIG. 2C

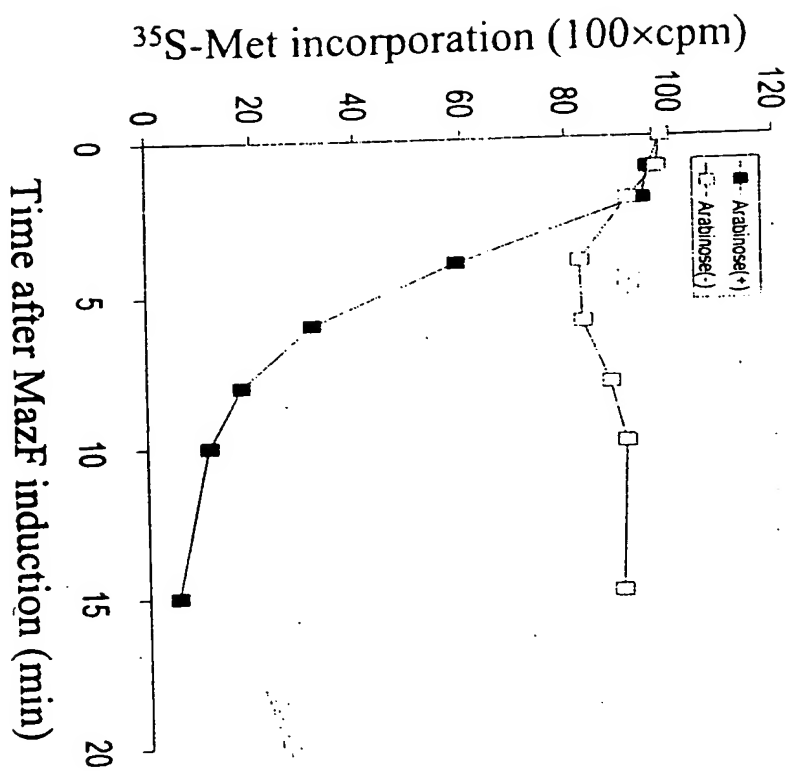


FIG. 2D

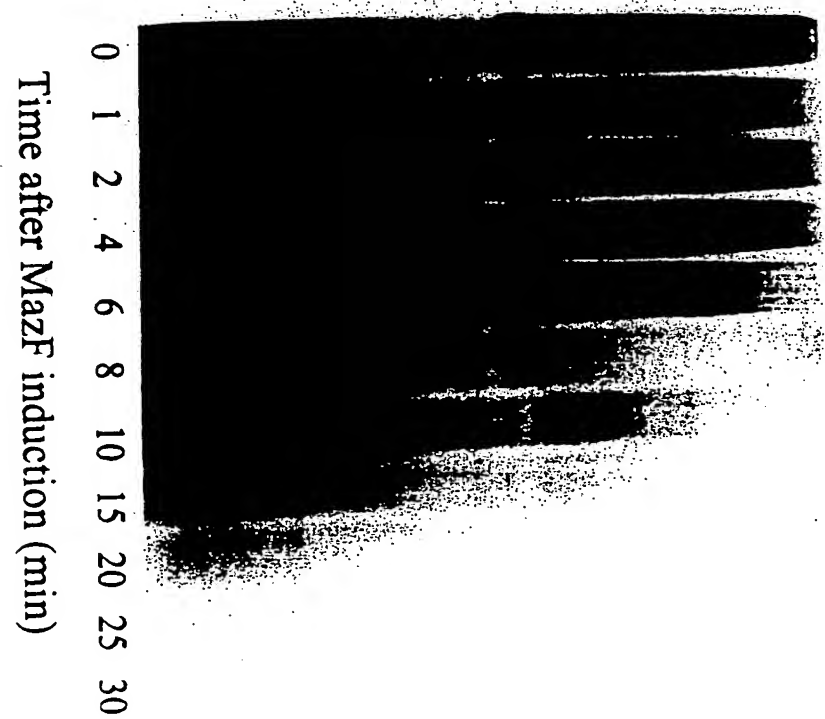
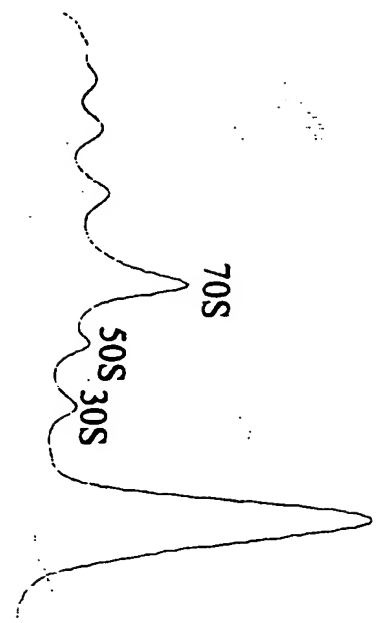


FIG. 2E

-arabinose



+arabinose

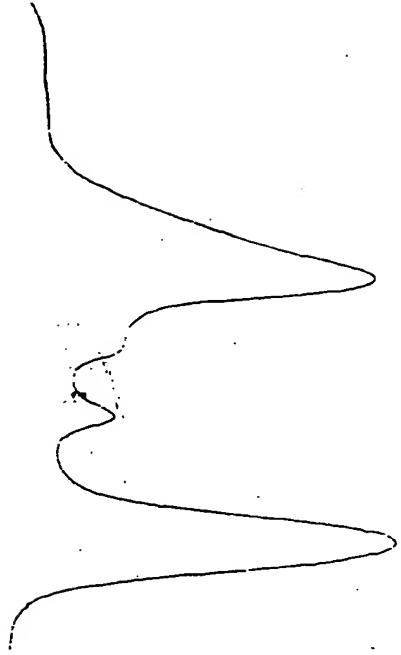


FIG. 3A

FIG. 3B

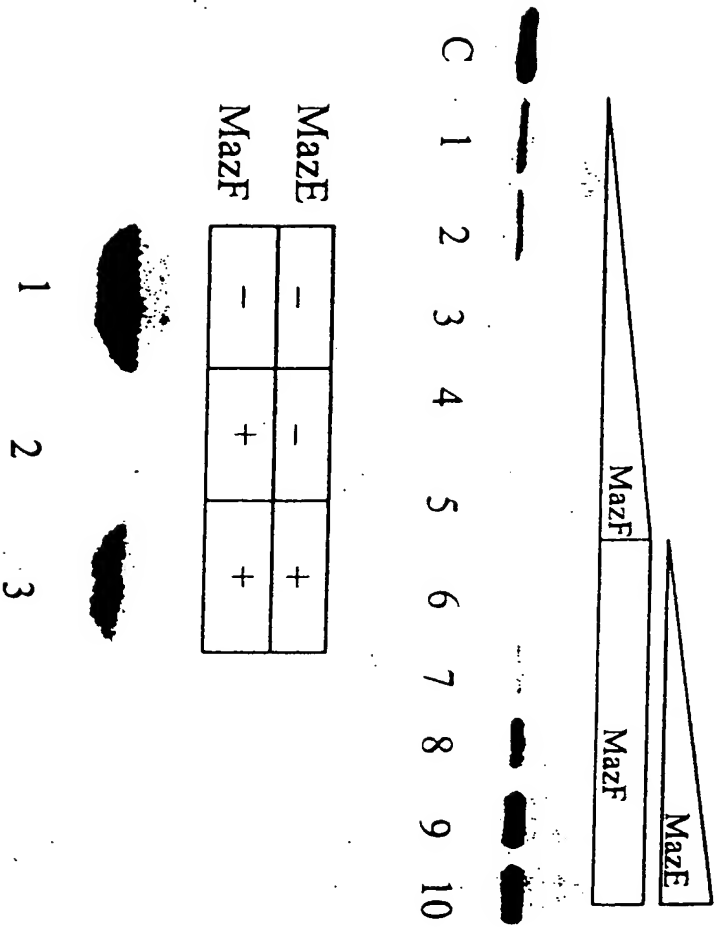


FIG. 3C

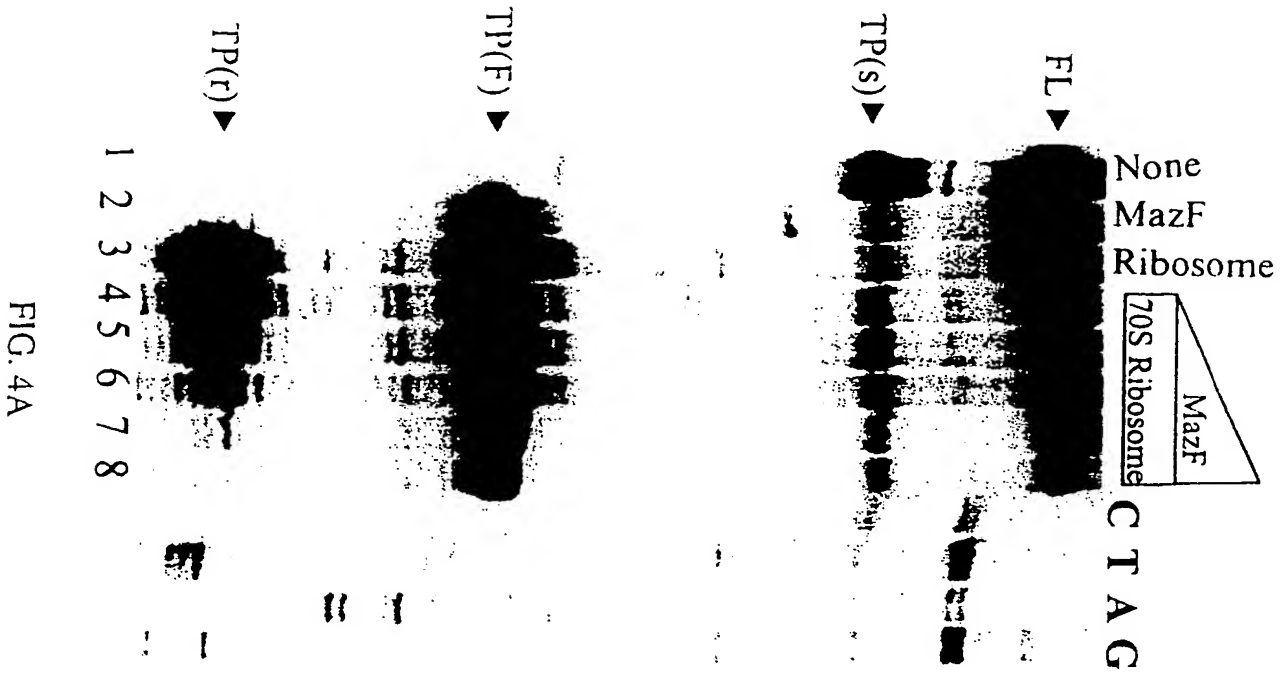


FIG. 4A

A  
T  
A  
A  
C  
A  
T  
G

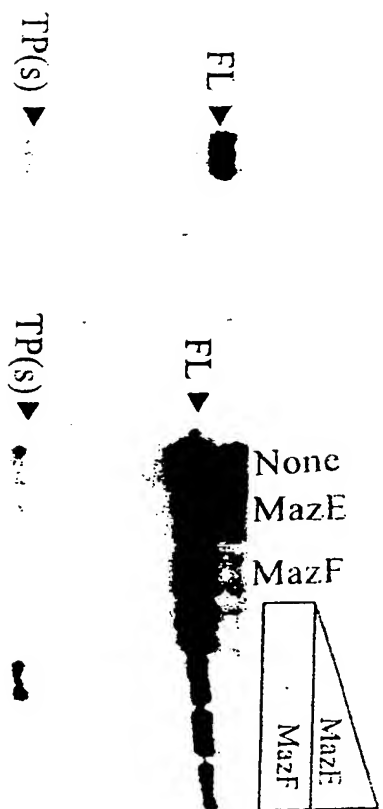


FIG. 4B

FIG. 4C

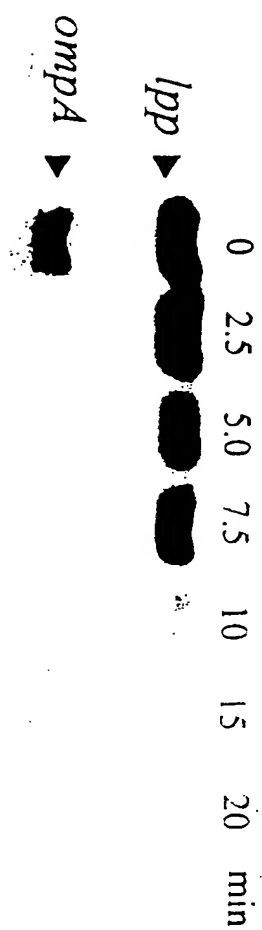


FIG. 4D



Control

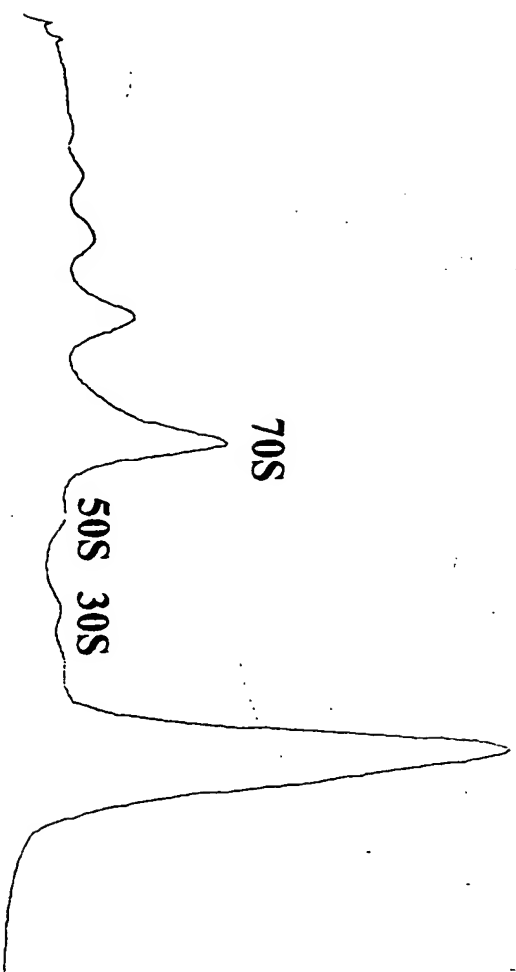


FIG. 5A

Kasugamycin (500 ug/ml)

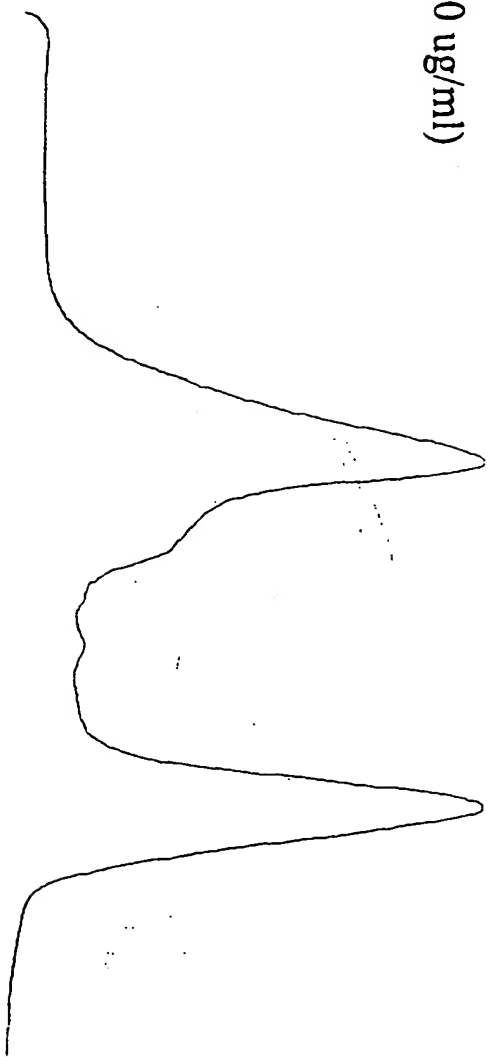


FIG. 5B

1 2 3 4 5 6

FL ▶  A horizontal gel electrophoresis image showing six lanes labeled 1 through 6. Lane 1 contains a single band. Lane 2 contains a single band. Lane 3 contains a single band. Lane 4 contains a single band. Lane 5 contains a single band. Lane 6 contains a single band.

TP(s) ▶  A horizontal gel electrophoresis image showing six lanes labeled 1 through 6. Lane 1 contains a single band. Lane 2 contains a single band. Lane 3 contains a single band. Lane 4 contains a single band. Lane 5 contains a single band. Lane 6 contains a single band.

TP(F) ▶  A horizontal gel electrophoresis image showing six lanes labeled 1 through 6. Lane 1 contains a single band. Lane 2 contains a single band. Lane 3 contains a single band. Lane 4 contains a single band. Lane 5 contains a single band. Lane 6 contains a single band.

TP(r) ▶  A horizontal gel electrophoresis image showing six lanes labeled 1 through 6. Lane 1 contains a single band. Lane 2 contains a single band. Lane 3 contains a single band. Lane 4 contains a single band. Lane 5 contains a single band. Lane 6 contains a single band.

FIG. 6

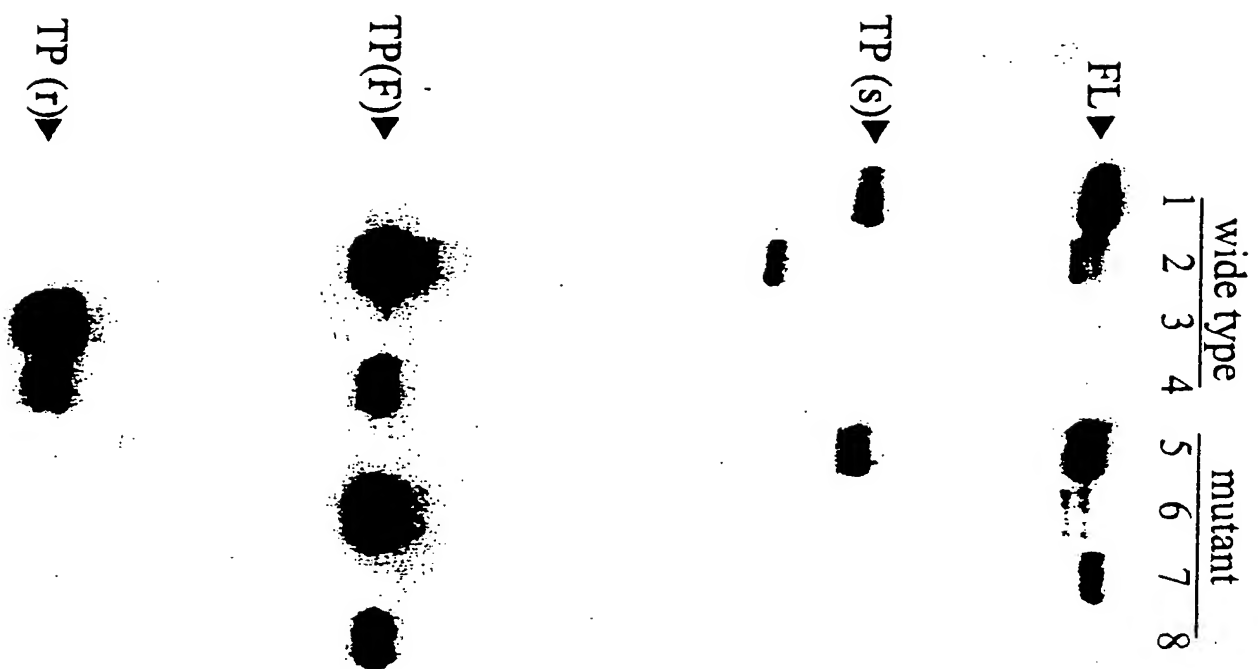


FIG. 7

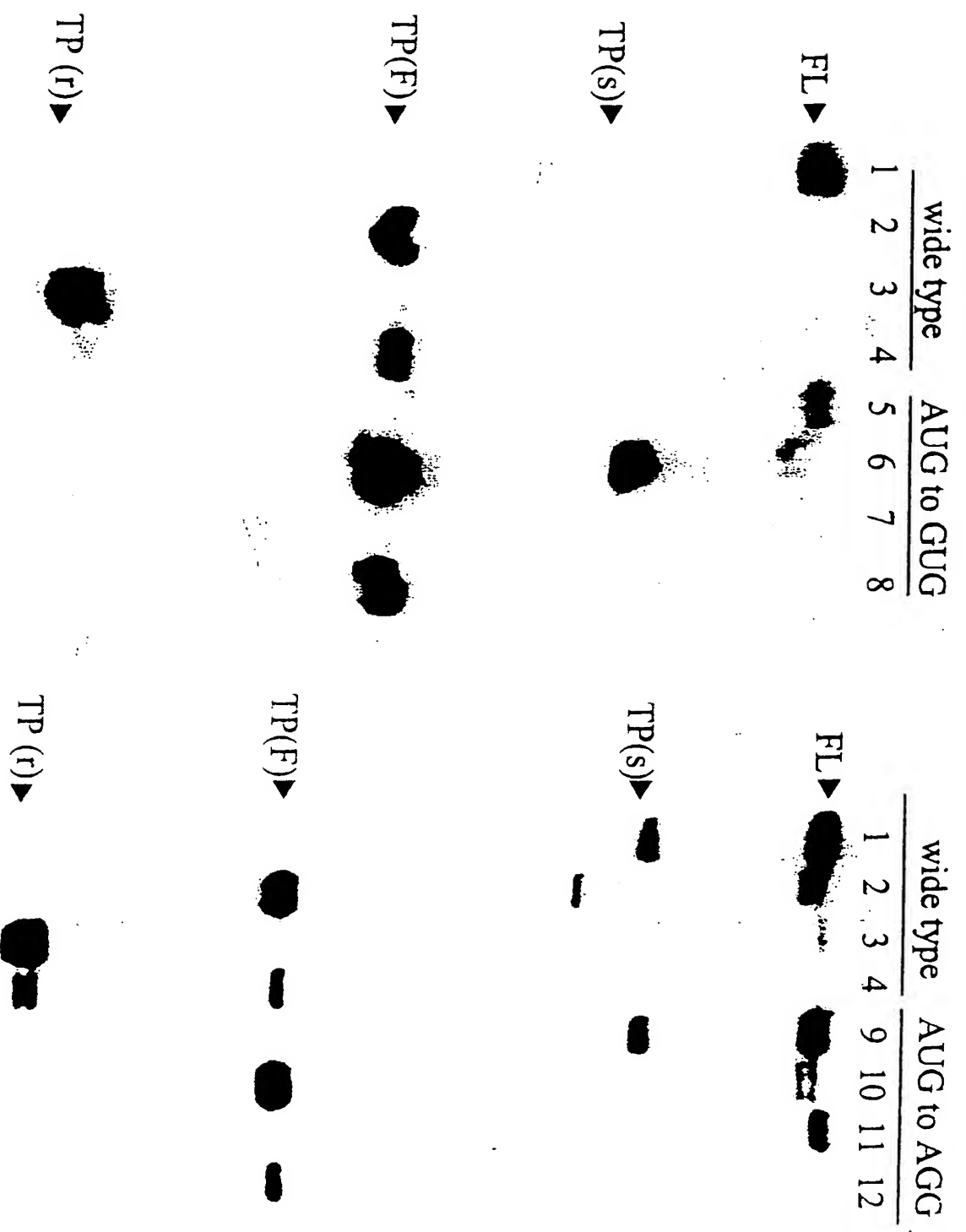


FIG. 8

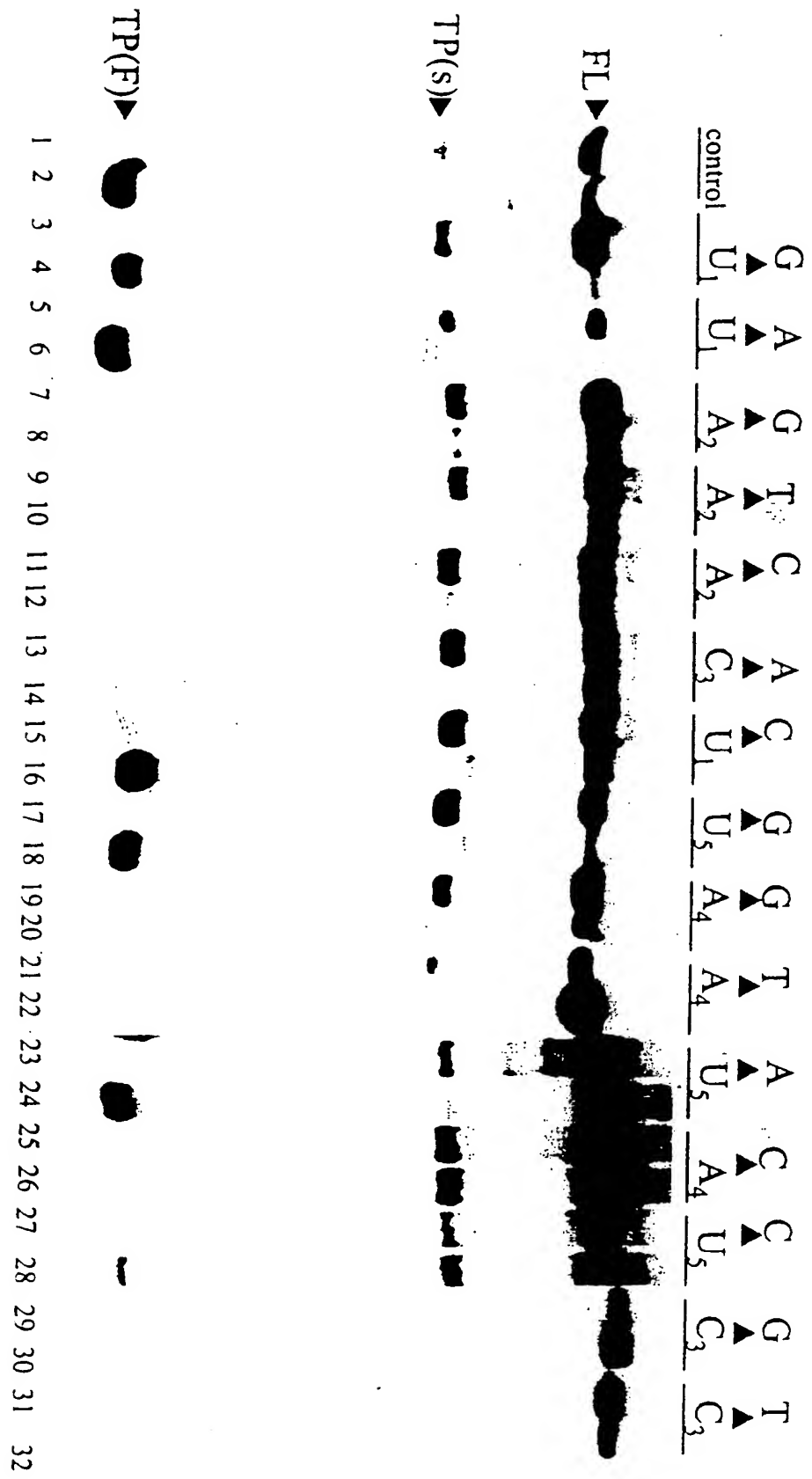


FIG. 9

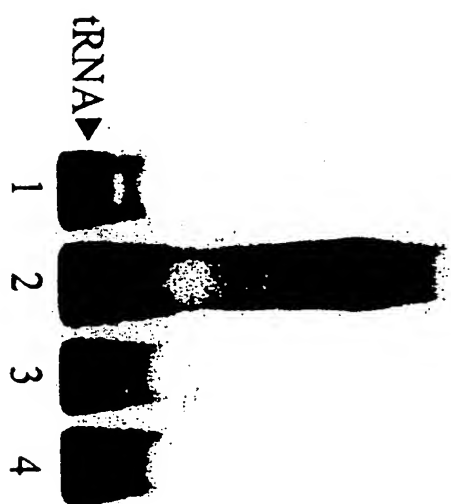
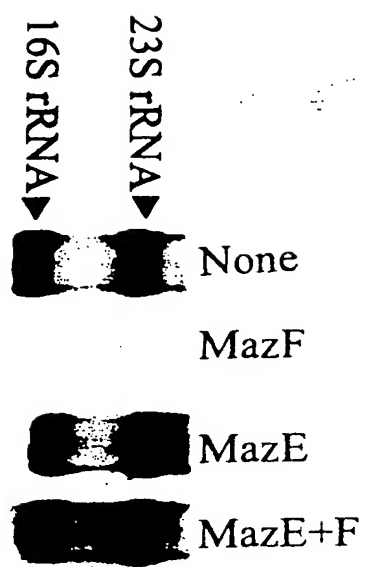


FIG. 10

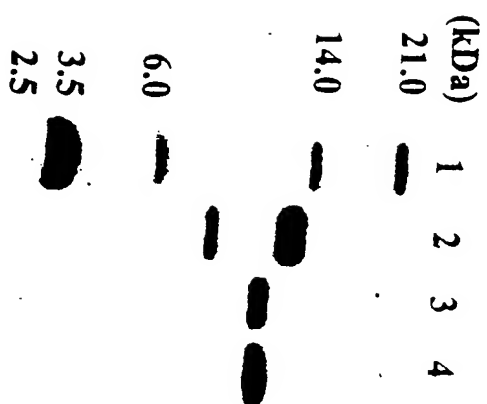


FIG. 11

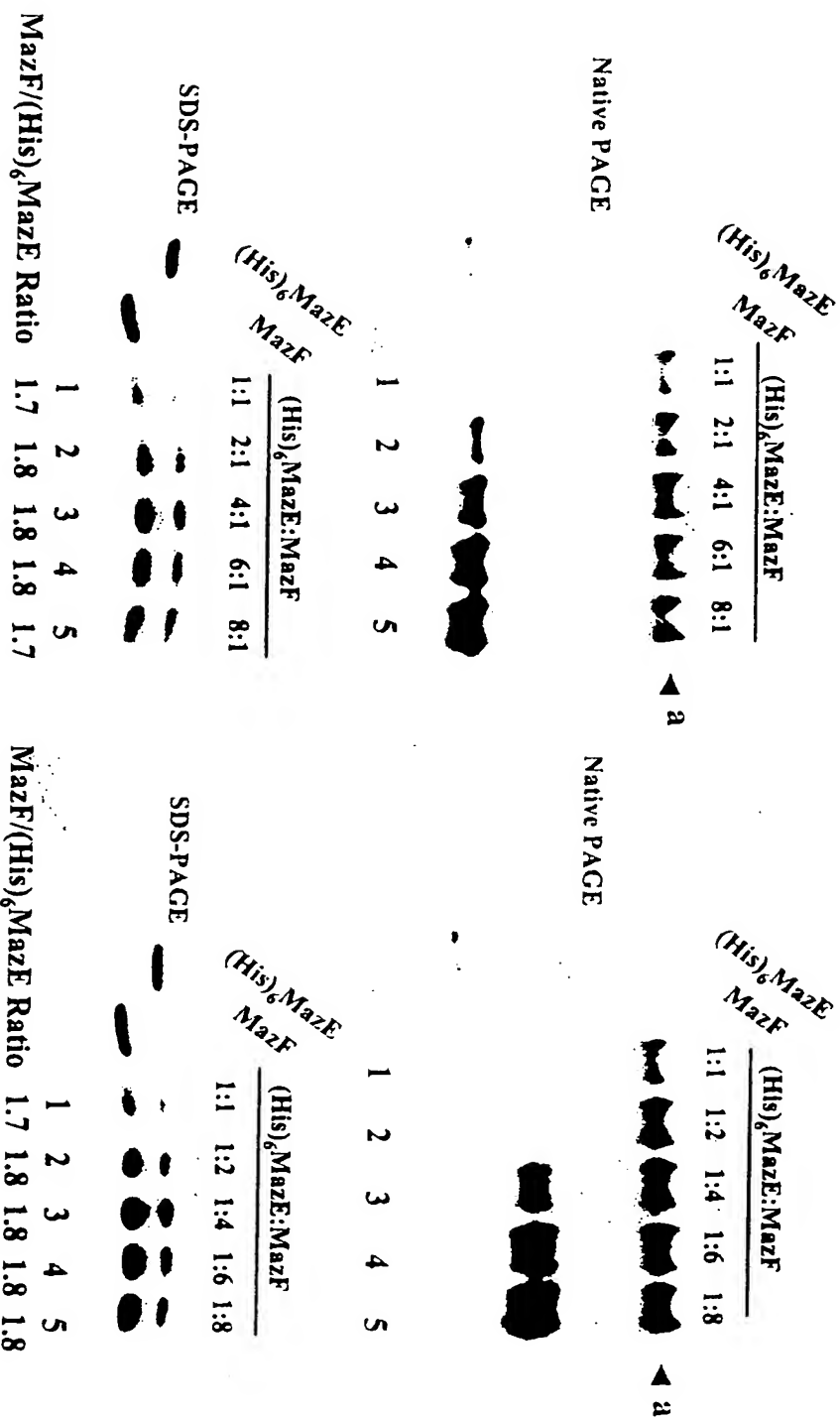


FIG. 12A

FIG. 12B



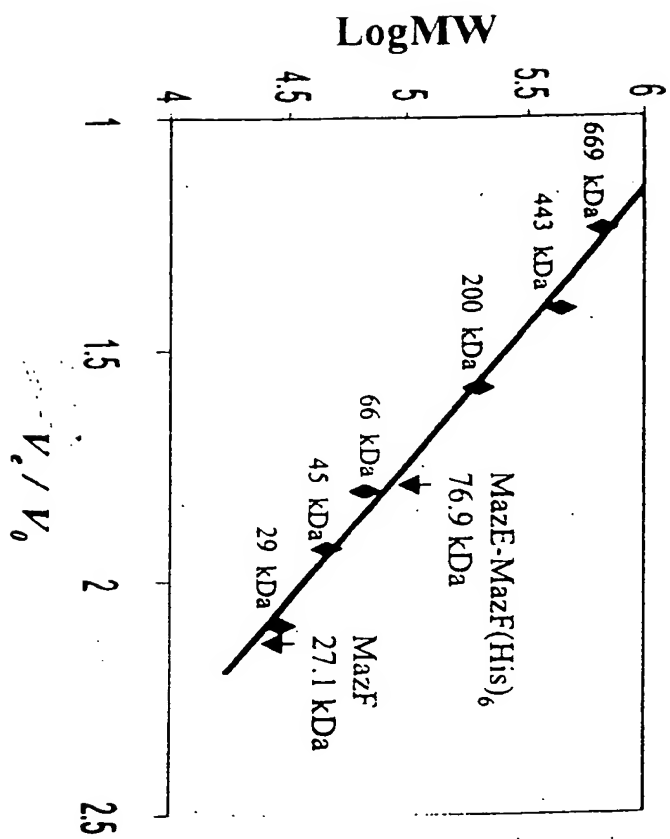


FIG. 13

1 2 3 4 5 6 7 8 9 10 11 12

1 2 3 4

(His)<sub>6</sub>MazE 0 0.2 0.4 0.6 0.8 1 2 4 6 8 10 20 (μM)

MazF 0 1 10 20 (μM)

FIG. 14A

FIG. 14B

1 2 3 4 5 6 7 8 9 10 11 12

(His)<sub>6</sub>MazE 0 0.2 0.4 0.6 0.8 1 2 4 6 8 10 20 (μM)  
 MazF 0 0.4 0.8 1.2 1.6 2 4 8 12 16 20 40 (μM)

FIG. 14C





FIG. 16A



FIG. 16B

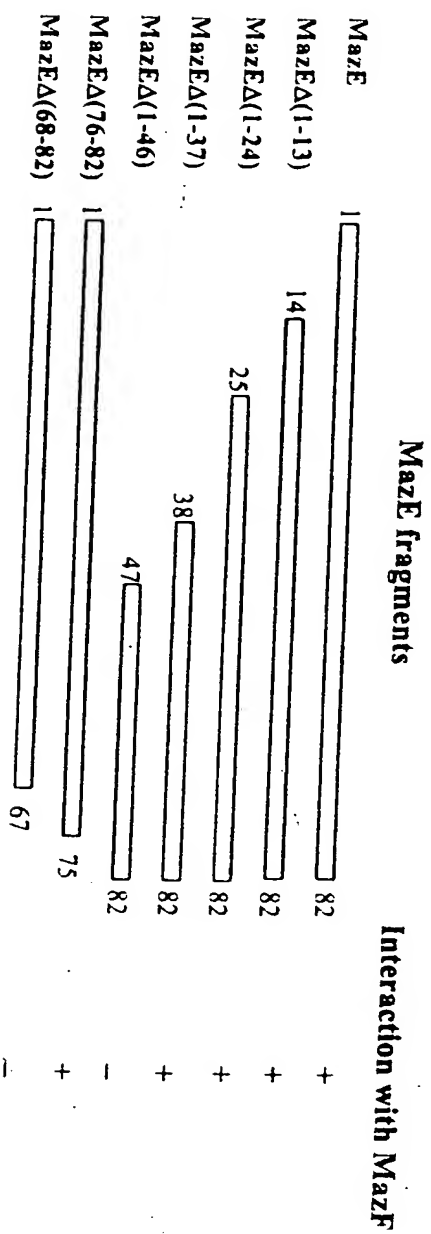


FIG. 17

1 2 3 4 5 6 7

FIG. 18A

1 2 3 4 5

FIG. 18B

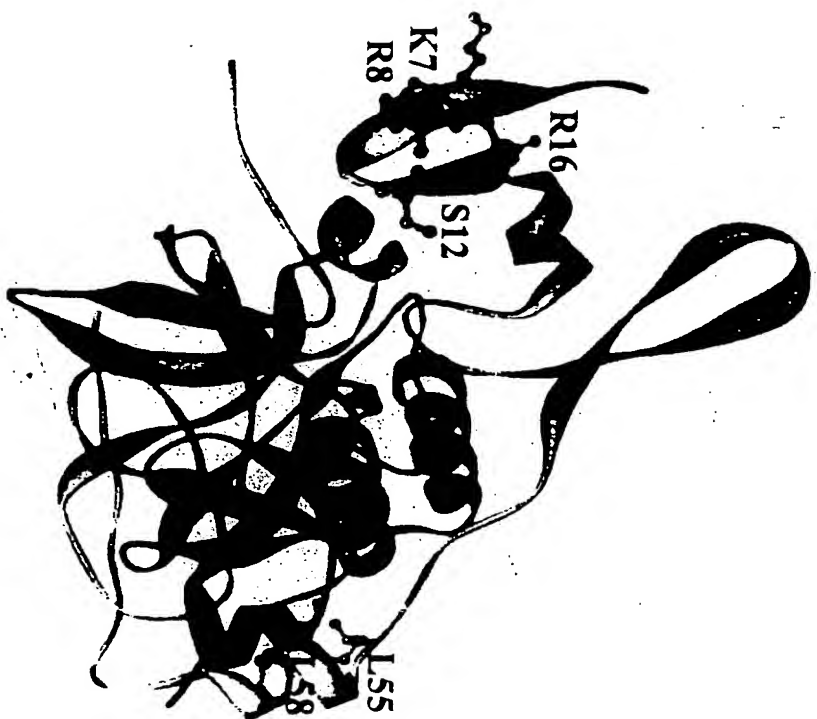


FIG. 19

FIG. 20A

Nucleic acid sequence of *Escherichia coli* MazF gene  
(NP\_289336.1)

atggta agccgatacg tacccgatat gggcgatctg atttgggttg attttgaccc gacaaaaggt agcgagcaag  
ctggacatcg tccagctgtt gtcctgagtc ctttcatgta caacaacaaa acaggtatgt gtctgtgtgt tccttgata  
acgcaatcaa aaggatatcc gttcgaagtt gttttatccg gtcaggaacg tgatggcgta gcgttagctg atcaggtaaa  
aagtatcgcc tggcgggcaa gaggagcaac gaagaaagga acagttgcc cagaggaatt acaactcatt  
aaagccaaaa ttaacgtact gattgggtag

FIG. 20B

Amino acid sequence of *Escherichia coli* MazF protein  
(NP\_289336.1)

MVSRYPDMG DLIWVDFDPT KGSEQAGHRP AVVLSPFMYN NKTGMCLCVP  
CTTQSKGYPF EVVLSGQERD GVALADQVKS IAWRARGATK KGTVAPEELQ  
LIKAKINVLI G



FIG. 21A

Nucleic acid sequence of *Escherichia coli* MazE gene

atgatccacagtagcgtaaagcggttggggaaattcaccggcggtgcggatccccgggtacgttaatgcaggcg  
ctcaatctgaatattgatgatgaagtgaagattgacctgggtggatggcaaattaattattgagccagtgcg  
aaagagcccgatattacgcttgctgaactgggtcaacgacatcacgccgaaaacctccacgagaatatcgac  
tggggagagccgaaagataaggaagtctggttaa

FIG. 21B

Amino acid sequence of *Escherichia coli* MazE protein

MIHSSVKRWGNSPA VRIPATLMQALN LNIDDEVKIDLV DGKLIIEPVRKEPVFTLAELVN  
DITPENLHENIDWGEPKDK EVW

FIG. 22A: Nucleic acid sequence of *Bacillus halodurans* MazF gene (SEQ ID NO: 39)

```
atgccagtagc cggatagagg gaatcttggt tatgtagact ttaaccaca atcggggtcat
gaccaagccg ggacacgacc ggctattggt ttgtccccta aattatttaa taaaaacaca
ggttttgcgg tggtttggtc aattaccaga caacaaaaag gttatccttt tgaaatagaa
ataccaccgg ggttacctat tgaaggggtt attcttactg accaagtaaa aagtctggat
tgagagagcaa gaaactttca cattaagga caagcaccag aggaaactgt tactgattgt
ttacaactta ttcatacatt tttatcttaa
```

FIG. 22B: Nucleic acid sequence of *Staphylococcus epidermidis* MazF gene (SEQ ID NO: 40)

```
atgattagaag aggagatggt tatttagcgg atttatcacc agttcaaggg tctgaacaag
ggggagtaag acctgtaggt atcattcaaa atgatactgg taataaatat agtccaactg
taattgtagc tgcgattact gatgggatta ataaagcgaa aataccaacc cacgtagaaa
ttgaaaagaa aaagtataaa ttagacaaag attcagttat tcttcttgaa caaattagaa
cactagataa aaagcgttta aaagaaaaat taacattttt atcagagagt aaaatgatag
aggttgataa tgccttagat attagtttgg gattaaataa ctttgatcat cataaatcttaa
```

FIG. 22C: Nucleic acid sequence of *Staphylococcus aureus* MazF gene (SEQ ID NO: 41)

```
atgattagac gaggagatgt ttatttagca gatttatcac cagtacaggg atctgaacaa
gggggagtc gacctgtagt cataattcaa aatgatactg gtaataaata tagtcctaca
gttattgttg cggcaataac tggtaggatt aataaagcga aaataccgac acatgtagag
attgaaaaga aaaagtataa gttggataaa gactcagtta tattattaga acaaattcgt
acacttgata aaaaacgatt gaaagaaaaa ctgacgtact tatccgatga taaaatgaaa
gaagtagata atgcactaat gattagttaa gggctgaatg cagtagctca accagaaaaa
ttaggcgtct attatatgta ttttccagag ataaataaaa tattgatataa
```

FIG. 22D: Nucleic acid sequence of *Bacillus subtilis* MazF gene (SEQ ID NO: 42)

```
ttgatttgtaa acgcggcgat gtttattttg ctgattttat tctgtttggt ggctcagagc
aaggcggggt gcgcccggtt ttagtgatcc aaaatgacat cggaaatcgc ttcagcccaa
ctgctattgt tgcagccata acagcacaaa tacagaaagc gaaattacca acccacgtcg
aaatcgatgc aaaacgctac ggttttgaaa gagattccgt tattttgctg gagcaaattc
ggacgattga caagcaaagg ttaacggata agattactca tctggatgat gaaatgatgg
ataaggttga tgaagcctta caaatcagtt tggcactcat tgatttttag
```

FIG. 22E: Nucleic acid sequence of *Neisseria meningitidis* MC58 MazF gene (SEQ ID NO: 43)

```
atggat atggtagtagc gcggcggaat ctatctgggt tcttagacc cgaccgtagg aagcgaaatc
aaaaagacac gtccttggtt cgtagtctct cctcctgaaa tacacaacta tctcaagact
gtgctgatcg ttcccatgac gagcggaagc cgtcctgccc cgttccgcgt caatgtccgc
tttcaggata aagacggttt gcttttgccc gaacagatta gggctgtgga taaagccgga
ttggtcaaac atcttggcaa tttagacaac agtacggctg aaaaactggt tgcagtattg
caggagatgt ttgcctga
```

FIG. 22F: Nucleic acid sequence of *Morganella morganii* MazF gene (SEQ ID NO: 44)

atgcgcccgg cggctggtca ggaggaaatc tgacatggaa agaggggaaa tctggcttgt  
ctcgcttgac cctaccgcag gtcattgagca gcagggaacg cggccgggtac tgattgtcac  
gccggctgct ttttaaccgcg tgaccgcctt gcctgttggt gtgcccgtga ccagcggagg  
taattttgcc cgcacagcag gctttgctgt gtcgcttgac ggcgcccggc tacgtaccac  
cggcgttgtg cgttgcgatc aaccccggaac gatcgatatg aaagcccgcg gcggcaaacg  
actcgaacgg gtgccagaga ctatcatgga cgacgttctt ggccgtctgg ccaccatcct  
gacctga

FIG. 22G: Nucleic acid sequence of *Mycobacterium tuberculosis* MazF gene (SEQ ID NO: 45)

gtgggtgattc ggggagcggc ctacagggtc gacttcggcg atgcgaagcg aggccacgag  
caacgcgggc ggcgctacgc cgtggctatc agccccggct cgatgccgtg gattgttagta  
accgtgggtg cgacgtcgac aagcgcccaa cctgcgggtt tccgaccaga gctggaagtc  
atgggaacaa agacacgggt cctgggtggat cagatccgga cgatcggcat cgtctatgtg  
cacggcgatc cggtcgacta tctggaccgt gaccaaattg ccaaggtgga acacgccgtg  
gcacgatacc ttggtctgtga

FIG. 22H: Nucleic acid sequence of *Bacillus anthracis* MazF gene (SEQ ID NO: 79)

tt gattgtaaaa cgcggcgacg tgtattttgc agacctttcc ccagttgttg  
gttctgagca aggaggtggt cgtccgggtc ttgtcattca aaatgacatc ggaaatcgtt  
ttagtccaac ggtgattgta gcggctatta ctgcacagat tcaaaaagcg aaattaccca  
ctcatgtgga aattgatgcg aaaaagtacg gttttgagag agattctgtt attttacttg  
agcagattcg aacaatcgat aagcagcgt taacggacaa aatcactcac ttagatgaag  
tgatgatgat tcgtgtagat gaagcgctac aaattagttt aggactaata gatttttaa

FIG. 23A: Amino acid sequence of *Bacillus halodurans* MazF  
(NP\_244588.1) (SEQ ID NO: 46)

MPVPDRGNLV YVDFNPQSGH DQAGTRPAIV LSPKLFNKNT GFAVVCPIR QQKGYPFIE  
IPPGLPIEGV ILTDQVKSLD WRARNFHIKQ QAPEETVTDC LQLIHTFLS

FIG. 23B: Amino acid sequence of *Staphylococcus epidermidis*  
MazF (AAG23809.1) (SEQ ID NO: 47)

MIRRGDVYLA DLSPVQGSEQ GGVRPVVVIQ NDTGNKYSPT VIVAAITDGI NKAKIPTHVE  
IEKKKYKLDK DSVILLEQIR TLDKKRLKEK LTFLSESKMI EVDNALDISL GLNNFDHHS

FIG. 23C: Amino acid sequence of *Staphylococcus aureus* MazF  
(NP\_372592.1) (SEQ ID NO: 48)

MIRRGDVYLA DLSPVQGSEQ GGVRPVVVIQ NDTGNKYSPT VIVAAITGRI NKAKIPTHVE  
IEKKKYKLDK DSVILLEQIR TLDKKRLKEK LTYLSDDMKM EVDNALMISL GLNAVAQPEK  
LGVYYMYFSE INKILI

FIG. 23D: Amino acid sequence of *Bacillus subtilis* (1NE8\_A)  
MazF (SEQ ID NO: 49)

MIVKRGDVYF ADLSPVVGSE QGGVRPVLVI QNDIGNRFSP TAIVAAITAQ IQKAKLPHTV  
EIDAKRYGFE RDSVILLEQI RTIDKQRLTD KITHLDDEMM DKVDEALQIS LALIDF

FIG. 23E: Amino acid sequence of *Neisseria meningitidis*  
MC58 MazF (NP\_266040.1) (SEQ ID NO: 50)

MYIPDKGDIF HLNFDPSSGK EIKGGRFALA LSPKAFNRAT GLVFACPIQ GNAAAARSSG  
MISTLLGAGT ETQGNVHCHQ LKSLDWQIRK ASFKETVPDY VLDDVLARIG AVLFD

FIG. 23F: Amino acid sequence of *Morganella morganii* MazF  
(AAC82516.1) (SEQ ID NO: 51)

MRRRLVRRKS DMERGEIWL VSLDPTAGHEQ QGTRPVLIVT PAAFNRVTRL PVVVPVTS GG  
NFARTAGFAV SLDGAGIRTT GVVRCQPR TIDMKARGGKR LERVPEITMD DVLGRLATILT

FIG. 23G: Amino acid sequence of *Mycobacterium tuberculosis*  
MazF (NP\_217317.1) (SEQ ID NO: 52)

MMRRGEIWQV DLDPARGSEA NNQRPVVVS NDRANATATR LGRGVITVVP VTSNIAKVYP  
FQVLLSATTT GLQVDCKAQA EQIRSIATER LLRPIGRVSA AELAQLDEAL KLHLDLWS

FIG. 23H: Amino acid sequence of *Bacillus anthracis* MazF  
(NP 842807) (SEQ ID NO: 80)

MIVKRGDVYF ADLSPVVGSE QGGVRPVLVI QNDIGNRFSP TVIVAAITAQ IQKAKLPTHV  
EIDAKKYGFE RDSVILLEQI RTIDKQRLTD KITHLDEVMM IRVDEALQIS LGLIDF

FIG. 24A: Nucleic acid sequence of *Deinococcus radiodurans mazE* gene (SEQ ID NO: 53)

atgacgagtcaaattcagaaatggggcaacagcctcgcgctccgcattcccaaagctctggcgagcaggtg  
ggactgacgcagagttcagaagtggagctgcttcttcaggacggtcagattgtcatccggccagttcctgct  
cggcagtacgatctcgccgctgctggccgaaatgacacctgaaaatctgcatggggaaacagactggggc  
gcactggaaggacgcgaggaatggttaa

FIG. 24B: Nucleic acid sequence of *Bacillus halodurans mazE* gene (SEQ ID NO: 54)

gtgacactcatgactactatacaaaaagtggggaaatagtttagctgttcgtattccgaaccattatgctaaa  
catattaacgttacgcaaggatctgaaattgaactaagcttagggagtgatcaaacgattattttaaagcct  
aaaaaaagaaagccaacattagaggaattagtgggcaaaaatcactcctgaaaacagacataacgaaattgat  
ttcggggagaacaggaaaggaattgttgttaa

FIG. 24C: Nucleic acid sequence of Plasmid R100 *pemI* gene (SEQ ID NO: 55)

atgcataccacccgactgaagaggggttggcggctcagttatgctgaccgtcccaccggcactgctgaatgcg  
ctgtctctggggcacagataatgaagttggcatggtcattgataatggccggctgattgttgagccgtacaga  
cgcccgcaatattcactggctgagctactggcacagtgtgatccgaatgctgaaatatcagctgaagaacga  
gaatggctggatgcaccggcgactggtcaggaggaaatctga

FIG. 24D: Nucleic acid sequence of Plasmid R466b *pemI* gene (SEQ ID NO: 56)

atgttatattttaaatataactttttatggagggaaaaaatgcataccactcgactgaagaaggttggcggctca  
gtcatgtgaccgtcccaccggcactgctgaatgcgctgtcgctgggtacagataatgaagttggcatggctc  
attgataatggccggctgattgtggagccgcacagacgcccgcagttactggtgagctgttggcacag  
tgcatccgaacgctgaaatctcggcagaagaacgtgaatggctggatgcgcggcggtggtcaggaggaa  
atctga

FIG. 24E: Nucleic acid sequence of *Escherichia coli chps* gene (SEQ ID NO: 57)

gtgcagatgcgtattaccataaaaaagatgggggaacagtgaggtatgggtcattcccaatatcgtaatgaaa  
gaacttaacttacagccggggcagagcgtggaagtgcaggtgagcaacaaccaactgattctgacacccatc  
tccaggcgctactcgcttgatgaactgctggcacagtgtgacatgaacgcgcgggaacttagcgagcaggat  
gtctggggtaaatccacccctgcgggtgacgaaatatggttaa

FIG. 24F: Nucleic acid sequence of *Pseudomonas putida* KT2440 *mazE* gene (SEQ ID NO: 58)

atgcagatcaagattcaacagtggggcaacagcgccgcatccgcttgcccgccgcagtactcaagcagatg  
cgctcggtgtcggtccaccctgagccttgacacaacgggtgagacgatggtgctcaaaccgcgtcaggtcg  
aaaccaagtacacccttgaggaactgatggccagtgtagctgagtgacacggagccagaggacatggcc  
gactggaatgccatgcgcccagtggggcgtgaagtgtga

FIG. 24G: Nucleic acid sequence of *Photobacterium profundum mazE* gene (SEQ ID NO: 59)

gtgcaatgagaactcagataagaaagatcggttaactcatttggttcaattattcctgccacttttattcgctc  
agcttgaactggcagagggcgagaaattgatgttaaaacgggttgatggaaaaattgtgattgagccaatta  
gaaaaatgaaaaacgtttccattcagtgagcgtgaattactaagtggattggatgcacacactgctcatg  
ctgacgaactggttgaattttctacccaggagctaggcgaataa

FIG. 25A: Amino acid sequence of *Deinococcus radiodurans* Maze (GenBank Accession No. NP\_294139) (SEQ ID NO: 60)

MTSQIQKWGN SLALRIPKAL AQQVGLTQSS EVELLLQDGQ IVIRPVPARQ YDLAALLAEM  
TPENLHGETD WGALEGREEW

FIG. 25B: Amino acid sequence of *Bacillus halodurans* Maze (GenBank Accession No. NP\_244587) (SEQ ID NO: 61)

MTLMTTIQKW GNSLAVRIPN HYAKHINVTQ GSEIELSLGS DQTIILKPKK RKPTLEELVA  
KITPENRHNE IDFGRTGKEL L

FIG. 25C: Amino acid sequence of PemI plasmid R100 (GenBank Accession No. NP\_052993) (SEQ ID NO: 62)

MHTTRLKRVG GSVMLTVPPA LLNALS LGTD NEVGMVIDNG RLIVEPYRRP QYSLAELLAQ  
CDPNAEISAE EREWLDAPAT GQEEI

FIG. 25D: Amino acid sequence of PemI plasmid R466b (GenBank Accession No. AAC82515) (SEQ ID NO: 63)

MLYLNITFME GKMHTTRLKK VGGSVMLTVP PALLNALS LG TDNEVGMVID NGR LIVEPHR  
RPQYSLAELL AQCDPNAEIS AEEREWLDAP AAGQEEI

FIG. 25E: Amino acid sequence of *Escherichia coli* ChpS (GenBank Accession No. NP\_290856) (SEQ ID NO: 64)

MQMRITIKRW GNSAGMVIPN IVMKELNLQP GQSVEAQVSN NQLILTPISR RYSLDELLAQ  
CDMNAAELSE QDVWGKSTPA GDEIW

FIG. 25F: Amino acid sequence of *Pseudomonas putida* Maze KT2440 (GenBank Accession No. NP\_742931) (SEQ ID NO: 65)

MQIKIQWGN SAAIRLPAAV LKQMR LGVGS TLSLDTTGET MVLKPVR SKP KYTLEELMAQ  
CDLSAPEPED MADWNAMRPV GREV

FIG. 25G: Amino acid sequence of *Photobacterium profundum* Maze (GenBank Accession No. AAG34554) (SEQ ID NO: 66)

AMRTQIRKIG NSLGSII PAT FIRQLELAEG AEIDVKTVDG KIVIEPIRKM KKRFPFSERE  
LLSGLDAHTA HADELVVIST QELGE

FIG. 26A

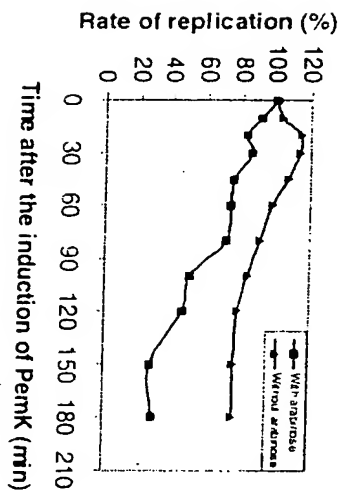


FIG. 26B

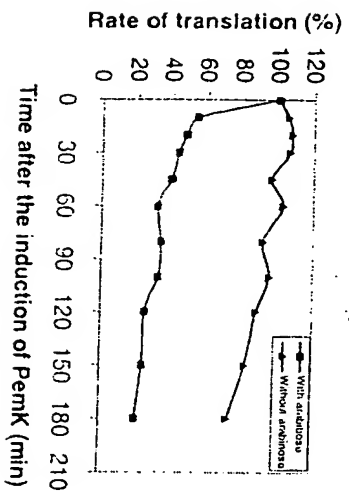


FIG. 26C

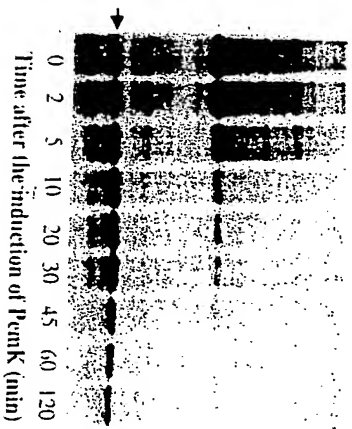




FIG. 27A

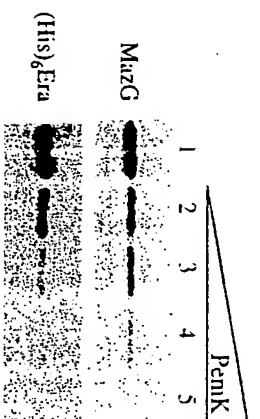


FIG. 27B

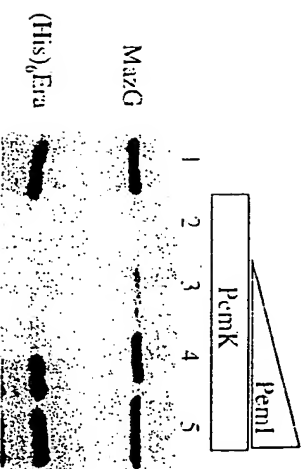


FIG. 27C



FIG. 28A



FIG. 28B

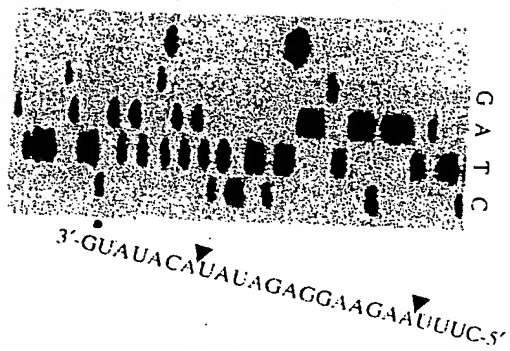


FIG. 28C

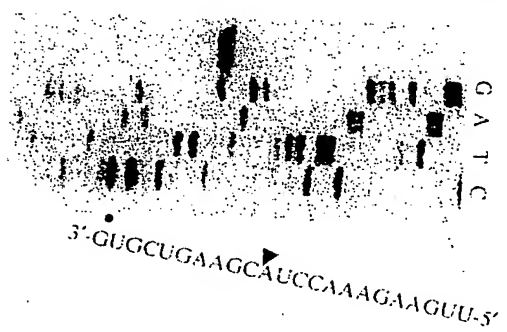


FIG. 28D

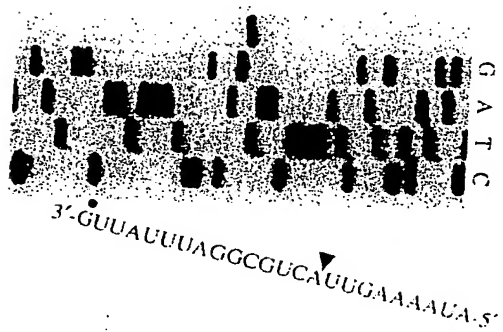


FIG. 28E

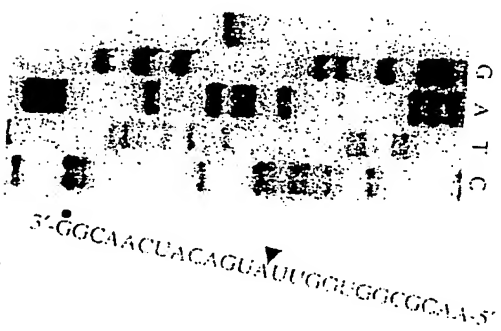


FIG. 29A

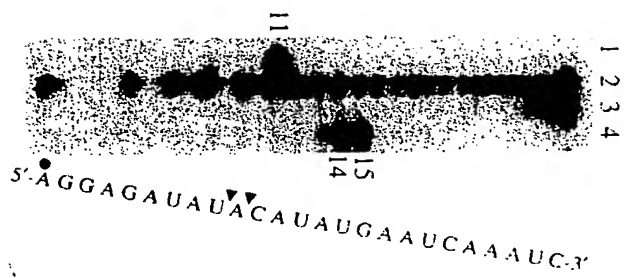


FIG. 29B

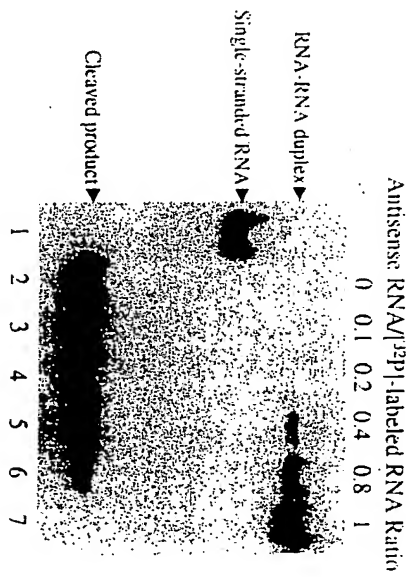


FIG. 30A

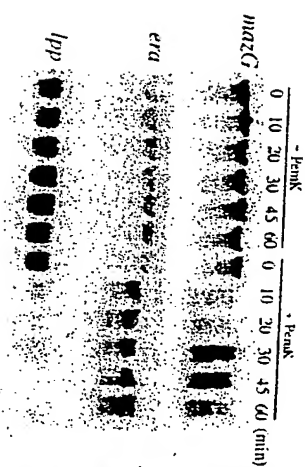


FIG. 30B

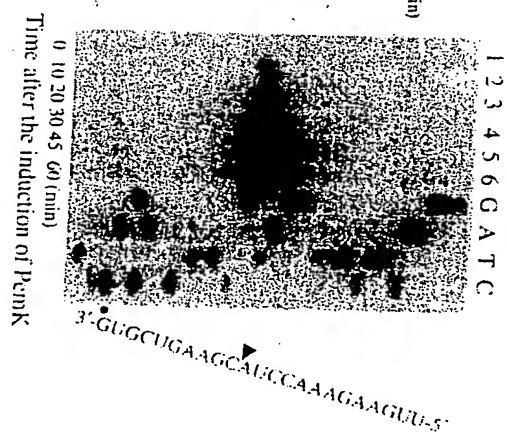


FIG. 30C

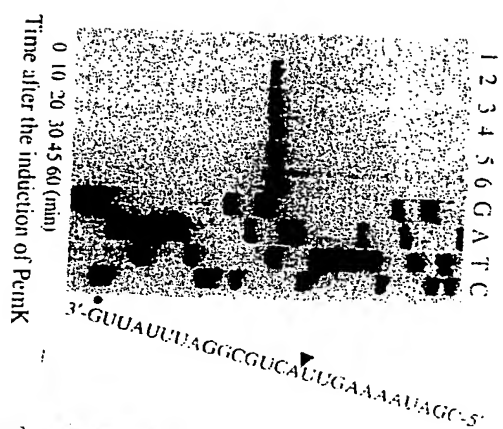
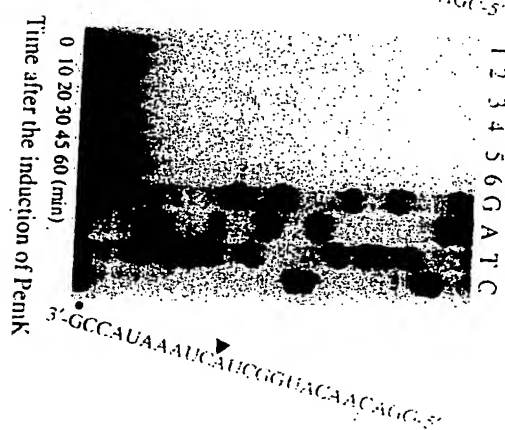


FIG. 30D



atggaaagag gggaaatctg gcttgtctcg cttgataccta  
ccgcagggtca tgagcagcag ggaacgcggc cggtgctgat  
tgtcacaccg gcggccttta atcgcgtagc ccgcctgcct  
gttgttgtgc ccgtaaccag cggaggcaat tttgcccgcga  
ctgccggctt tgcggtgtcg ttggatgggtg ttggcatacg  
taccacaggt gttgtacgtt gcgatcaacc ccggacaatt  
gatatgaaag cacggggcgg aaaacgactc gaacgggttc  
cggagactat catgaacgaa gttcttggcc gcctgtccac  
tattctgact tga

FIG. 31A

MERGEIWLVS LDPTAGHEQ QGTRPVLIVT PAAFNRVTRL  
PVVVPVTSGG NFARTAGFAV SLDGVGIRTT GVVRCDQPRT  
IDMKARGGKR LERVPETIMN EVLGRLSTILT

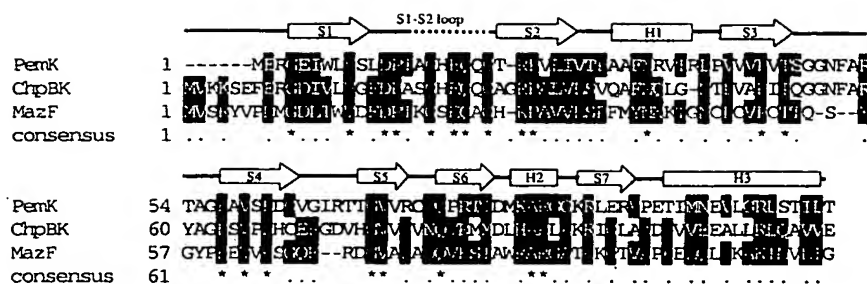
FIG. 31B

atgcatacca cccgactgaa gagggttggc ggctcagtta  
tgctgaccgt cccaccggca ctgctgaatg cgctgtctct  
gggcacagat aatgaagttg gcatgggcat tgataatggc  
cggctgattg ttgagccgta cagacgcccg caatattcac  
tggctgagct actggcacag tgtgatccga atgctgaaat  
atcagctgaa gaacgagaat ggctggatgc accggcgact  
ggtcaggagg aaatctga

FIG. 32A

MHTTRLKRVG GSVMLTVPPA LLNALSLGTD NEVGMVIDNG  
RLIVEPYRRP GYSLAELLAQ CDPNAEISAE EREWLDAPAT  
GQEEI

FIG. 32B



```

PemKR100_E.coli 1 -----MERGEIWLVS DPTAGHEOOG-TRIVIVTPAAFNVRIRLPVVV:VFSUGHFARTAGFAVSI DGVLRIT---TG
PemK_M.celatum 1 -----MTERGDYILVS DPTSHREGS-TPIV.VVS GAFNRLIKTFVLPITRKEE-ARTGPAVSI TDAITRI---AG
PemK_P.putida 1 -MKRLKFARQDVRNLDPVIRQDQSGNFAITTAAGT-ASHLA LTP EQED WHHGFATISGATTQT---QG
ChpBK_E.coli 1 EVFKSEFERGDIVLVGFQNASPHQQHAGNNAISLVQTH-QLNTLEAPITQRENFAFYVGFSPHCEEQDV---HG
PemK_S.flexneri 1 HVKARTPHGEETWYFNPQVAHHLLE-PRYCTVVDKKLNLKVAACQISTANAEISTVVTNVLPRDQGNLHC
MazF_E.coli 1 HVSEYVPEMHLLIWDFHTKSSQALHRAVLSHFMEYKNGMCLCVACPTQ-----SKYPPFEVLSQER---DG

PemKR100_E.coli 71 VVRIDPEFTLRKAPGGLRREPTEFNNVGRS IET--
PemK_M.celatum 72 VIRIDPEFTSHIRPKGRKVRSISGLDPAANAILT--
PemK_P.putida 76 VMKNNVTVLEGFAPFISLPPAFLDMHVRVQTEF--
ChpBK_E.coli 77 VVIVNPEFMMHHAFLHPIGLAADEVEALLRQAVVE--
PemK_S.flexneri 80 VVIAHLKAVDIIKGFHFTVADKLISVISKVNIDPO
MazF_E.coli 72 VALADLVKSAWRARGATKKGTVAPEELQLIKARINVLG--

```

FIG. 34



## Human Eotaxin Sequence

G	P	A	S	V	P	T	T	C	C	F	N	L	A	
AUG	GGU	CCA	GCA	UCU	GUU	CCG	ACU	ACC	UGU	UGC	UUU	AAC	CUG	GCG
N	R	K	I	P	L	Q	R	L	E	S	Y	R	R	I
AAC	CGC	AAA	AUU	CCG	CUG	CAG	CGC	CUG	GAA	AGC	UAU	CGC	CGU	AUU
T	S	G	K	C	P	Q	K	A	V	I	F	K	T	K
ACC	UCU	GGC	AAA	UGC	CCG	CAG	AAA	GCG	GUG	AUC	UUU	AAA	ACC	AAA
L	A	K	D	I	C	A	D	P	K	K	K	W	V	Q
CUG	GCG	AAA	GAU	AUU	UGC	GCG	GAU	CCG	AAA	AAA	AAA	UGG	GUG	CAG
D	S	M	K	Y	L	D	Q	K	S	P	T	P	K	P
GAU	UCU	AUG	AAA	UAU	CUG	GAU	CAG	AAA	UCU	CCG	ACC	CCG	AAA	CCG
UAA														

FIG. 35

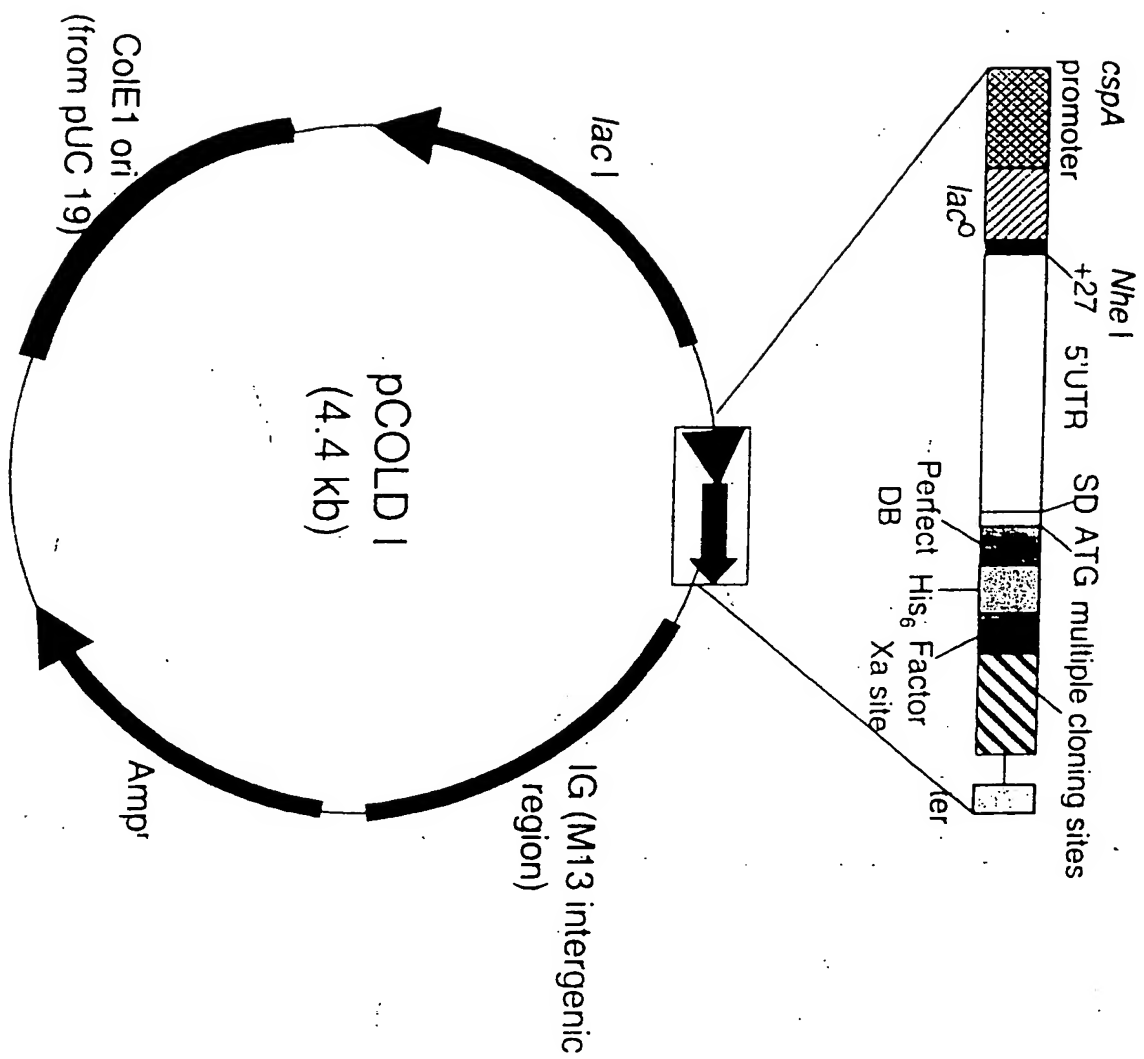


FIG. 36

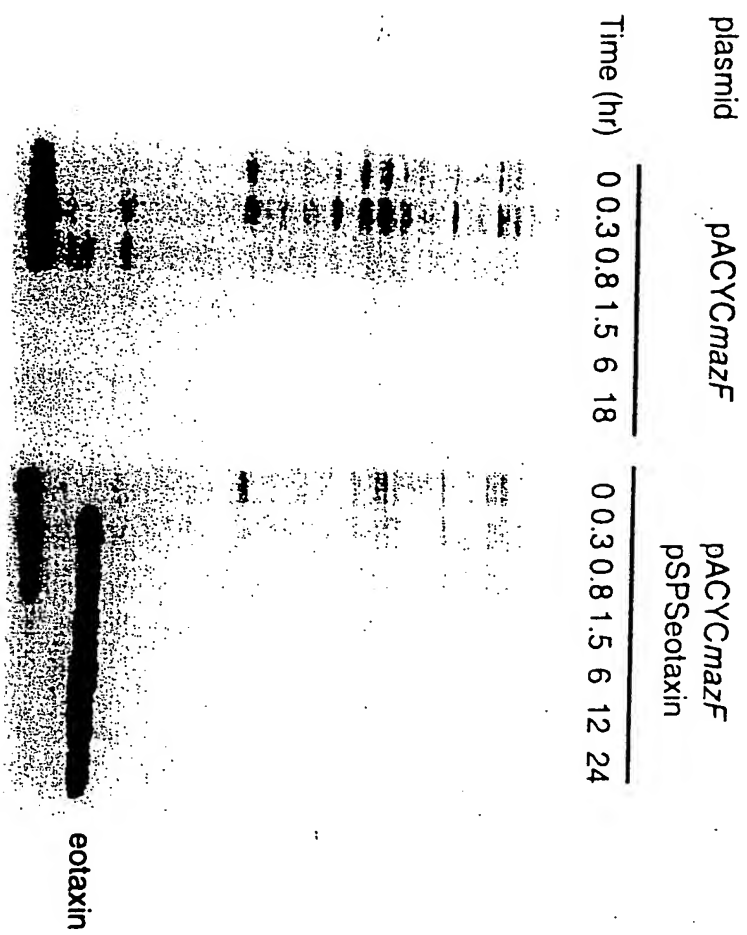


FIG. 37

FIG. 38A

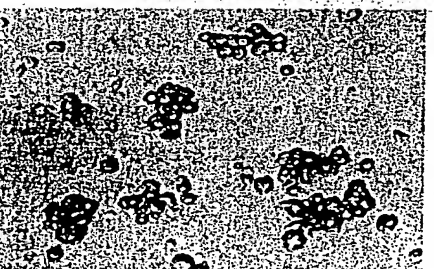
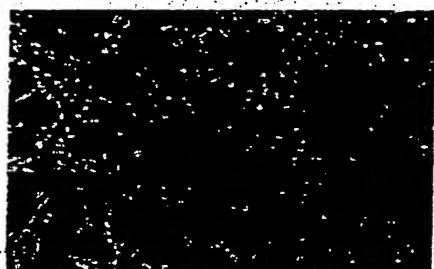
FIG. 38B

FIG. 38C

-Tetracycline



+Tetracycline



1 day

5 days

7 days

FIG. 38D

FIG. 38E

FIG. 38F

FIG.39A

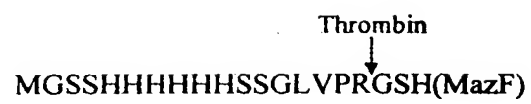
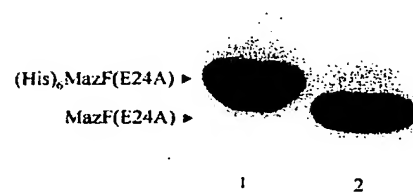


FIG.39B



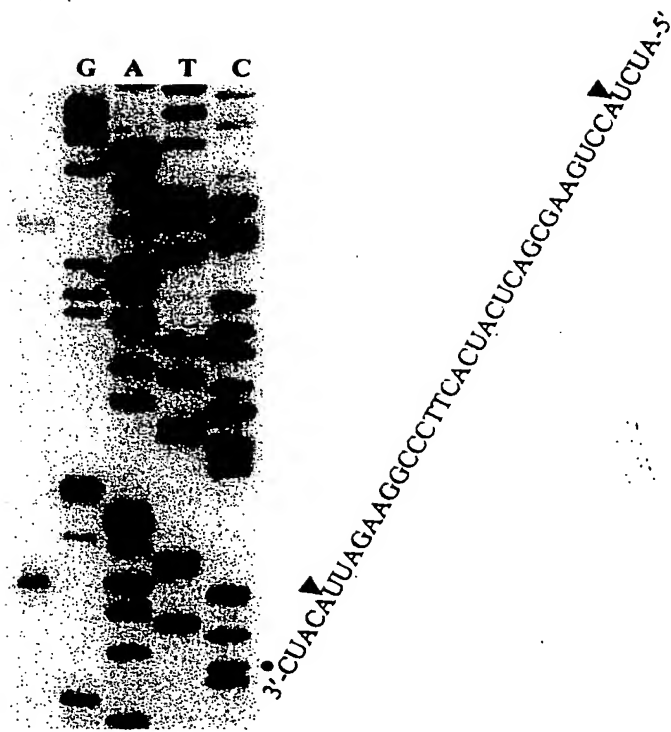


FIG.40

FIG.41A

```

Rv0456A      1  -----MLRGEI W QVDLD PARGSAANMRPAVIVSNDRANAAAIRLDRGV
Rv2801c      1  -----MMRRGEI W QVDLD PARGSEANNQRPVAVVSNERANATATRLGRGV
MaxF         1  MVSRYVPD MGDLI W VDFD PTKGSEQAGHREFAVVSPPFMYNN-----KTGM
Rv1991c      1  -----MVISRAEII WADLGPPSGSQPAKRFPVL V IQSDPINAS-----RLAT
Rv0659c      1  -----MRRGEL W FAAT -----PGSDREVL V ITRIPVAD-----RIGA
Rv1942c      1  --MTALPA RGEV W WCEMA -----EIGRSPFV V ITRIPVAD-----RIGR
consensus    1  -- 1 rgvww em grRPvvvl s d a -----rl

```

```

Rv0456A      45  VPVVPVTSNTEKVPPIGVVAGSERWPGRRFEGAGPAGWIRRCATSP LPS -
Rv2801c      46  ITVVPVTSNIAKV-YPFQVLLSATTTGLQVDCKAQAEQIRSIATERLLRP
MaxF         46  CLCVECTTQSKSY--PFEVVL S---GQERDGVALA QVKSIAWRARGAT
Rv1991c      43  VIAAVITSNATALAAMPGNVFLPATTTRLPRDSV HVTAI VTLNKTDLTDR
Rv0659c      33  VVVALTRTRRGLVSELE LTAVEN--RVPSDCV HFDNIHTLPRTATRRR
Rv1942c      38  ALVAPCTTTIRGLASEVVLEPGSD--PIPRRSA VNLDS VESVSVAVLVNR
consensus    51  lv p Tt rgl 1 s -- ipr vn d v svs 1 r

```

```

Rv0456A      95  -----
Rv2801c      90  IGRVSAAE LAQLDEA KLHLDLWS
MaxF         90  KKGTVAPE ELQLIKAKINVLI G--
Rv1991c      93  VGEVPASL HEVDRGLRRVL L--
Rv0659c      81  ITRLSPARLHEACQTLRASTGC--
Rv1942c      86  LSRLADIRMSA ACTALEVANDCSR
consensus    101 lgrla mr i al vd

```

FIG.41B

```

B.subtilis    1  ----MIVKRGDVYFADLS EVVGSEQGGVRPVV I QNDIGNRFSPTAIVAA
B.anthraxis  1  ----MIVKRGDVYFADLS EVVGSEQGGVRPVV I QNDIGNRFSPTVIVAA
S.aureus      1  ----MIRRGDVYLADLS EVVGSEQGGVRPVV I QNDTGNKYSPTVIVAA
E.coli        1  MVSRYVPD MGDLI W VDFD PTKGSEQAGHREFAVVSPPFMYN--NKTGMCLC
consensus    1  v GDI w D P GSEQAG RP vvl m N Tgm

```

```

B.subtilis    47  ITAQIQKAKLP THVEIDAKRYGFERDSVILLE QIRTIDK-QRLTDKITHL
B.anthraxis  47  ITAQIQKAKLP THVEIDAKRYGFERDSVILLE QIRTIDK-QRLTDKITHL
S.aureus      46  ITGRINKAKIP THVEIEKKKYKLDKDSVILLE QIRTIDK-KRLKEKLTYL
E.coli        49  VPCTTQSKGYPFEVVL S---GQERDGVALA DQVKSIAWRARGATKAGTV
consensus    51  v q P V l g erD V L dQvksi R K v

```

```

B.subtilis    96  DDEMMDKVDEALQISLALIDF-----
B.anthraxis  96  DEVMMIRVDEALQISLGLIDF-----
S.aureus      95  SDDKMKEVDNALMISLGLNAVAQPEKLGVIYYMYFSEINKILI
E.coli        95  APPEELQLKAK INVLI G-----
consensus    101 a e l i inv ig -----

```





10/560303

LAP20 Rec'd PCT/PTO 12 DEC 2005

FIG. 43A nucleic acid sequence of Mazf-mt1 (NP\_217317) (SEQ ID NO: 69)

gtgatgcgcc gcggtgagat ttggcaggtc gatctcgacc ccgctcgagg tagcgaagcg  
aacaaccagc gccccgccgt cgtcgtcagc aacgaccggg ccaacgcgac cgccacgcgt  
cttggggcgcg gcgtcatcac cgtcgtgccg gtgacgagca acatcgccaa ggtctatccg  
tttcagggtg tgttgctggc caccactact ggtctccagg tcgactgcaa ggcgcaggcc  
gagcaaatca gatcgattgc taccgagcgg ttgctccggc caatcggccg agtttcagcc  
gccgaacttg ccagctcga tgaggctttg aaactgcatc tcgacttatg gtcgtag

FIG. 43B nucleic acid sequence of Mazf-mt2 (CAE55283) (SEQ ID NO: 70)

atgctgcgcg gtgagatctg gcaggctcac ctggatccgg cccgcggcag cgccggcaaat  
atgcggcggc cagcggtaat tgtcagcaac gacagggcca acgctgccgc gatacgtctc  
gaccgaggcg tggcgccggc tgtcccggtt accagcaaca ccgaaaaggc cccattcca  
ggtgtgtgtg ccggcagcga gcgggtggcct ggccgtcgat tcgaaggcgc aggcccagca  
ggttgatcc gtcgctgcgc aacgtctccc ctgccgagct ga

FIG. 43C nucleic acid sequence of Mazf-mt3 (CAA98393) (SEQ ID NO: 71)

gtggtgatta gtcgtgccga gatctactgg gctgacctcg ggccgccatc aggcatcag  
ccggcgaagc gccgcccggt gctcgtaatc cagtcagatc cgtacaacgc aagtcgcctt  
gccactgtga tcgcagcggc gatcacgtcc aatacggcgc tggcggcaat gcccggaac  
gtgttcttgc ccgcgaccac aacgcgactg ccacgtgact cggctcgtaa cgtcacggcg  
attgtcacgc tcaacaagac tgacctcacc gaccgagttg gggaggtgcc agcgagcttg  
atgcacgagg ttgaccgagg acttcgtcgc gtactggacc tttga

FIG. 43D nucleic acid sequence of Mazf-mt4 (CAB09387) (SEQ ID NO: 72)

atgcggcgcg gtgaattgtg gtttgccgcc acacctggtg gtgacagacc agtacttgtc  
cttaccagag atccgggtggc agaccgcacg ggcgcggtcg ttgtggtggc cctaaccgcg  
acccgccgag gcctgggtgtc ggaattggag ctacacggccg tcgaaaaccg tgttccgagc  
gactgcgtcg tcaacttcga caacattcat acgttgccac gcaccgcatt ccgacgcgcg  
atcacccggc tgtccccggc ccgcctgcac gaagcctgtc aaacactccg ggcgagcacg  
gggtgttga

FIG. 43E nucleic acid sequence of Mazf-mt5 (CAB06519) (SEQ ID NO: 73)

gtgaccgcac ttccggcgcg cggagagggtg tggtggtgtg agatggctga gatcggtcgg  
cgaccagtcg tcgtgctgtc gcgcgatgcc gcgatccctc ggctgcgacg cgcacttgtc  
gcgccttgca ccacgaccat ccgagggcta gccagtgagg ttgttcttga acccggttcc  
gaccgatcc cgcgcggttc cgcggtgaat ttggactcag tcgaaagtgt ctcggtcgcg  
gtattggtga atcggttgg ccgcctcgcc gacatccgga tcgcgcacat ctgcacggcc  
ctcgaggtcg ccgtcgattg ctctcgatga

FIG. 44A amino acid sequence of Mazf-mt1 (NP\_217317) (SEQ ID NO:74)

MMRRGEIWQV DLDPARGSEA NNQRPAVVVS NDRANATATR LGRGVITVVP VTSNIAKVYP  
FQVLLSATTT GLQVDCKAQA EQIRSIATER LLRPIGRVSA AELAQLDEAL KLHLDLWS

FIG. 44B amino acid sequence of Mazf-mt2 (CAE55283) (SEQ ID NO:75)

MLRGEIWQVD LDPARGSAAN MRRPAVIVSN DRANAAAIRL DRGVVPVVPV TSNTEKVPIP  
GVVAGSERWP GRRFEGAGPA GWIRRCATSP LPS

FIG. 44C amino acid sequence of Mazf-mt3 (CAA98393) (SEQ ID NO:76)

MVISRAEIIW ADLGPPSGSQ PAKRRPVLVI QSDPYNASRL ATVIAAVITS NTALAAMPGN  
VFLPATTTRL PRDSVVNVTA IVTLNKTDLT DRVGEVPASL MHEVDRLRR VLDL

FIG. 44D amino acid sequence of Mazf-mt4 (CAB09387) (SEQ ID NO:77)

MRRGELWFAA TPGGDRPVLV LTRDPVADRI GAVVVVALTR TRRGLVSELE LTAVENRVPS  
DCVVNFDNIH TLPRTAFRRR ITRLSPARLH EACQTLRAST GC

FIG. 44E amino acid sequence of Mazf-mt5 (CAB06519) (SEQ ID NO:78)

MTALPARGEV WWCMAEIGR RPVVVLSRDA AIPRLRRALV APCTTTIRGL ASEVVLEPGS  
DPIPRRSASN LDSVESVSVA VLVNRLGRLA DIRMRAICTA LEVAVDCSR

Figure 45A nucleic acid sequence of *Pseudomonas putida* Pem-like gene (KT2440) (SEQ ID NO: 81)

```

                                gtgaa acggttgaaa ttcgccaggg gtgatattgt
tcgcgtcaac ctggacccaa cagtcgggcg ggaacagcag ggctccggcc gacctgcact
ggtacttact ccggctgcgt tcaatgcttc aggcctggct gtaatcatcc cgatcactca
aggtggggat ttcgcgaggc atgcggggtt cgctgtcacg ctcagcggtg cgggcacgca
gactcagggg gtgatgcttt gcaaccaggt gcgcacagtc gaccttgaag cacgatttgc
caagcgcata gagtcggtgc ctgaagctgt catcctggat gcactggcgc gtgtgcaaac
cctattcgat taa

```

Figure 45B nucleic acid sequence of *Mycobacterium celatum* Pem-like gene (SEQ ID NO: 82)

```

                                t gaattgctct gacggaacgc
ggcgacatct acatcgtttc gcttgacccg acgtcgggac atgagcagag cggcacgcgc
ccagtattgg tcgtgtcccc gggcgcggtt aatcgctga cgaaaacacc ggtcgtgcta
cctataacac gcggcgggaa ctttgcccga acggcagggt tcgctgtctc gctgaccgat
gcgggtactc gcaccgccgg cgtaatacgc tgcgatcagc ctcgctcgat tgatatccgc
gcccgtaaag gccgcaaggt tgaacgtgtg ccgtctgggg ttcttgacga agcgttggcc
aagctcgcca cgatcttgac ttga

```

Figure 45C nucleic acid sequence of *Shigella flexneri* 2a str. 301 Pem-like gene (SEQ ID NO: 83)

```

                                atggtaaag gcacggacgc
cacatcgtgg tgagatctgg tattttaacc ctgatccggt tgccgggcat gaacttcagg
ggccacatta ttgcattgtg gtaacggaca aaaaactcaa caatgtttta aaagttgcta
tgtgtgccc gatttcaaca ggggcaaata cagcacgttc cacaggggtg acggtgaacg
tcctccccg tgatacgcaa accggtaacc tgcattggcg tgtactttgt caccagctaa
aagccgtcga tcctattgcc cgtggcgcta aatttcatac cgttgccgat gaaaaattga
ttagtgaagt tatcagtaaa ctggtgaatt taatcgaccc acaataa

```

Figure 45D nucleic acid sequence of *E. coli* ChpBK (SEQ ID NO: 84)

```

                                atgggt aaagaaaagt gaatttgaac
ggggagacat tgtgtctggtt ggctttgatc cagcaagcgg ccatgaacag caaggtgctg
gtcgacctgc gcttgtgctc tccgttcaag cctttaatca actgggaatg acgctggtgg
ccccattac gcagggcgga aattttgccc gttatgccgg atttagcgtt cctttacatt
gcgaagaagg cgatgtgcac ggcgtggtgc tggatgaatca ggtgcggatg atggatctac
acgcccggct ggcaaagcgt attggtctgg ctgcggatga ggtggtggaa gaggcgttat
tacgcttgca ggcggtggtg gaataa

```

FIG. 46A amino acid sequence of *Pseudomonas putida* KT2440 Pem-like protein (SEQ ID NO: 85)

MKRLKFARGD IVRVNLDPTV GREQQGSGRP ALVLTAAAFN ASGLAVIPI TQGGDFARHA  
GFAVTLTGAG TQTQGVMLCN QVRTVDLEAR FAKRIESVPE AVILDALARV QTLFD

FIG. 46B amino acid sequence of *Mycobacterium celatum* Pem-like protein (SEQ ID NO: 86)

MTERGDIYIV SLDPTSGHEQ SGTRPVLVVS PGAFNRLTKT PVVLPITRGG NFARTAGFAV  
SLTDAGTRTA GVIRCDQPRS IDIRARKGRK VERVPSGVLD EALAKLATIL T

FIG. 46C amino acid sequence of *Shigella flexneri* 2a str. 301 Pem-like protein (SEQ ID NO: 87)

MVKARTPHRG EIWYFNPDPV AGHELQGPY CIVVTDKKLN NVLKVAMCCP ISTGANAARS  
TGVTVNVLPD DTQTGNLHGV VLCHQLKAVD LIARGAKFHT VADEKLISEV ISKLVNLIDP  
Q

FIG. 46D amino acid sequence of *E. coli* ChpBK (SEQ ID NO: 88)

MVKKSEFERGDIVLVGFDPASGHEQQGAGRPALVLSVQAFNQLGMTLVAPITQGGNFARYAGFSVPLHCEE  
DVHGVVLVNQVRMMDLHARLAKRIGLADEVVEEALLRLQAVVE

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